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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/723,321	11/26/2003	David G. Shaw	56770US035	9479

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EXAMINER	
PADGETT, MARIANNE L	

ART UNIT	PAPER NUMBER
1762	

DATE MAILED: 05/25/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/723,321	SHAW ET AL.	
	Examiner	Art Unit	
	Marianne L. Padgett	1762	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *14 March 2006*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-21* is/are pending in the application.

4a) Of the above claim(s) *1-9* is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *10-21* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date *3/14/06*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 3/14/2006 has been entered.

2. The terminal disclaimer (TD) has been approved, hence removing the obviousness double patenting (ODP) over PN 5,725,909 in section 6 of the 12/14/2005 mailing. The arguments with citations concerning support for the claims as amended appears to be sufficient to remove the various new matter rejections (sections 3-5), as well as supplying clarifications of meanings. Removal of the new matter enables application of the effective filing date from the parent applications, such that the one err to rejection over Affinito (6,497,598 B2) is removed.

3. The amendments to the specification removes the objections to the specification for the 10/3/2005 amendment, but it is noted that the amendment is technically informal as in the paragraphs amending on p.22, changes have been made without properly indicating them, however these changes do appear to correctly put the information in the specification back to the original disclosure, so the examiner is not sending out a noncompliant. Note in the p. 22, lines 4-19 amendment, in the first line of the second paragraph, "metallized" should be underlined, and in the p.22, line 25-p.23, line 3 amendment, in the 5th line, there should be brackets containing [metal or oxide barrier material].

4. The IDS of 3/14/2006 is made of record, noting that with the new matter removed, the effective filing date for claim subject matter appears to go back to 10/4/1993, hence of the cited references (besides the dictionary), only Dr. Shaw's Rad Tech 92 paper, presented on 4/30/1992 &Yializis et al.'s 12/1990 paper are prior art.

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. A nonstatutory obviousness-type double patenting rejection is appropriate where the conflicting claims are not identical, but at least one examined application claim is not patentably distinct from the reference claim(s) because the examined application claim is either anticipated by, or would have been obvious over, the reference claim(s). See, e.g., *In re Berg*, 140 F.3d 1428, 46 USPQ2d 1226 (Fed. Cir. 1998); *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) or 1.321(d) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent either is shown to be commonly owned with this application, or claims an invention made as a result of activities undertaken within the scope of a joint research agreement.

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

6. Claims 10-19 & 21 are rejected under 35 U.S.C. 103(a) as being unpatentable over Yializis et al (4,842,893) or Shaw et al (5,032,461) in view of Komiya (EP 0,475,441 A2), as previously applied in sections 16 & 8 of the 6/3/2005 & 12/14/2005 actions, and optionally further considering the article by Dr. Shaw "A New High-Speed Vapor Deposition Process for Applying Acrylate Coatings" (paper presented 4/30/1992).

To reiterate, the primary references teach flash evaporating and curing monomers of acrylates to form uniform thin on substrates films that may be flexible plastics, like polyesters, which are thermoplastics, and where the coatings may be used for packaging materials. An inorganic or metal layer may be vacuum (evaporation or sputter) deposited thereon, followed by another vapor deposited acrylate monomer layer, which is cross-linked. Additional interleaved layers may also be deposited. Continuous substrates and rotating drum supports are illustrated and discussed. In Yializis et al (893), see the abstract; Figures 1-3, 4d & 5; col. 1, lines 12-22, 23-25+ & 43-48 (for food packaging, related to making capacitors, or protective coatings for metals or other materials, etc); col. 2, lines 28-50+; col. 3, lines line 8 (flush evaporated), 20-25 (curing), and 26-65 (substrates, e.g. polyester or polyolefins, flexible, like packaging, & the coating of additional materials (plural), such as metals or other polymers); col. 4, 23-col. 5, line 30+, esp. col. 4, lines 26-28 for vacuum system and moveable support, line 35 for continuous moving surface, lines 48-49 for smooth surface and sheet or flexible material substrate, lines 56-66 for metal or inorganic material deposited by evaporation or sputtering, line 68 for flash evaporation and col. 5, lines 20-30 for acrylate monomers; col. 6, lines 24-33+ for flash evaporation, etc., of monomers; col. 7, lines 5-15 for curing. In Shaw et al (461), see the abstract; figures 2 & 4; col. 1, lines 15-18; col. 2, lines 14-12 (multilayer structures with multiple dielectric layers, or dielectric & interleaved metal or other inorganic material layers); Summary; esp. col. 3, lines 26-40+, col. 4, lines 7-9 & 23-31 (flexible substrates, such as plastics, i.e. polyester, polyethers, polyolefins or the like & use as coatings for packaging); col. 6, lines 23+ (acrylate monomers); col. 9, lines 1-31 (EB vaporization or sputtering of exemplary aluminum in multilayer structure with vaporized acrylate resins); col. 10, lines 10-52 (multiple monomer layers may be cured together, but deposited dielectric is cured before deposit of inorganic such as metal layers); col. 11, lines 26-50 (rotatable drum, inorganic or metal material deposited); col. 12, lines 50-64 (describes figure 2c, with first & second monomer flash evaporation deposition systems and inorganic deposition stations 1 & 2); col. 13, lines 1-10 and 51-61 (metal or other inorganic material by

evaporation or sputtering onto cross-linked monomer); col. 14, lines 9-41, especially 39-41 (figures 14 showing layer structures with inorganic material interleaved between thicker dielectric layers, where the cured film is "water clear throughout the structure to provide a relatively transparent structure"); etc; and claims 3-5, 8-9, 15, 17-19, 22-24 & 36.

The examiner notes in Yializis et al ('893), lines 46-col. 8, line 2, as pointed out by applicants, that this reference notes that the deposition of inorganic material is optional (can be eliminated) or alternatively replaced by a second monomer deposition system, however optional or alternative teachings do not negate other teachings, and as noted above the monomer coating is taught as a top protective coating, as well as a base coating before other coatings & the process is taught to be related to capacitor formation which constitutes at least triple layer deposition, hence taken as a whole these teachings would have been suggestive to one of ordinary skill of depositing an acrylate layer followed by an inorganic layer, with a protective acrylate layer on top to serve the taught protective function thereof, in order to provide taught features and be consistent with the statement of scope (col. 4, lines 18-22), but especially in view of analogous teachings in the paper presented 4/30/1992 by Dr. Shaw, which note the technique has coating uniformity [thickness] of approximately 3%, specifically recommends producing barrier coatings for packaging applications and exemplify coating sequences of acrylate/metal with acrylate protective coating after metallization, noting any combination of metal and/or polymer coating steps are possible (page 854, especially 2nd & 3rd paragraphs in 1st col., and last three paragraphs in 2nd col.), which supplies explicit motivation for the desirability of the claimed configuration, as well as recognition of the barrier properties of the materials taught by both primary references.

Note that Shaw et al. (461) explicitly sets forth the dielectric acrylate/inorganic/dielectric acrylate... layer transparent structure, such that the Dr. Shaw 4/30/1992 article, while providing cumulative teachings is repetitious of those in the Shaw et al. patent, except explicitly discussing just the three layer structure and explicitly noting that the coatings for packaging are intended as barrier layers,

thus showing the inherency of this feature and/or the desirable use & optimization therefore, as well as explicitly suggesting the top monomer layer be used as a protective layer.

Yializis et al ('893) or Shaw et al ('461), both differ from the claims by not disclosing that their inorganic material deposited between layers of flash vapor deposited and cross-lined acrylate is a transparent oxygen oxide barrier film or that the acrylate layer is a smoothing layer. The primary patent references deposit the acrylate monomer in the same manner as taught by the present application, hence while the layer is not called a "smoothing" layer, it must inherently have the same effect when deposited on analogous plastic substrates, that may be thermoplastics as claimed, especially in view of the Dr. Shaw 4/30/1992 article, which indicates that the analogous process produces a uniformity of approximately 3% variation in thickness, which would have been expected to be consistent with the claimed reduction of substrate surface roughness.

While barrier layers are not explicitly discussed, coatings for packaging materials and interleaved multilayers, such as substrate/acrylate/inorganic material/acrylate with possible repeated sequences are suggestive of barriers coatings, especially in view of the Dr. Shaw 4/30/1992 article discussed above, and of Komiya (EP) who teaches the known usefulness of inorganic compounds, such as Si oxide as transparent gas barrier material in packaging materials (page 2, lines 10-25), and further teaches that such gas barriers may be improved by a polymeric overcoat (page. 3, Summary), explicitly stating that the combination has "superior gas barrier properties", hence applicant's arguments that contradict this explicit teachings are not convincing. The examiner notes that one of ordinary skill would recognize that for the protective function of preventing the known prior art problem of cracking of thin-film inorganic or metal compound barrier layers (page 2), the surface resin layer would have been expected to improve the overall barrier properties of the composite structure, since cracks would interfere with the performance of barrier functions, thus providing further suggestion that inorganic barrier layers should have a top protective coating to protect against this known problem. Komiya (EP) provides specific examples of

plastic substrates (polyester, polypropylene, PET, etc., page 3, lines 36-41), and of oxides or nitrides, etc., such as Si_xO_y, Al_2O_3, Si_3N_4, where those that are transparent are particularly preferred, and deposition processes include sputtering, CVD, plasma deposition, etc. Therefore, it would have been obvious to one of ordinary skill in the art, given Komiya's teachings of the usefulness of those inorganic materials as barrier materials and their deposition techniques in preparing packaging materials, to employ them in the process of Yializis et al ('893) or Shaw et al ('461), for their taught use in coating packaging substrates and generic inorganic interleaved layer, for their known gas barrier properties, and expected effectiveness, especially given overlapping deposition techniques for specific desirable species of the primary references generic teachings. Komiya (EP) also provides cumulative reasons for specifically using a top protective monomer coating when coating packaging materials, as it shows the problems known when not using a protective coating, but the primary references suggest either top protective acrylate coatings or final acrylate monomer coatings in a series of interleaved layers.

Note while there is no explicit teaching in the primary reference of a thermoplastic substrate being a roll of sheet material, one of ordinary skill in the art would have recognized that the normal bulk substrate supply made for sheet material to a rotating drum coating apparatus is via a roll, as the most practical and efficient storage/supply means therefore, hence making use of a roll obvious.

7. Other art equivalent to Komiya remains Misiano et al (5,571,574) for claims 10-17 and 19, or JP 58-128,852 for claims 10-16 and 19.

8. Claim 20 is rejected under 35 U.S.C. 103(a) as being unpatentable over Yializis et al ('893) or Shaw et al ('461), in view of Komiya (EP)), optionally further considering the article by Dr. Shaw "A New High-Speed Vapor Deposition Process for Applying Acrylate Coatings" (paper presented 4/30/1992), as applied to claims 10-19 & 21 above, and further in view Kubacki (4,096,315) or Kadowaki (JP 4-353819).

The main difference between this amended claim & the above combination of section 6, is the use of a plasma to treat the acrylate smoothing layer deposited on the substrate in vacuum before deposition of transparent oxygen barrier layer thereon, however both primary references teach the necessity of curing their vapor deposited monomer before subsequent inorganic material deposition, although their suggested treating techniques are electron beam or ultraviolet radiation (Yializis et al.-col. 1, lines 12-22+; Shaw et al.-col. 3, lines 61 -65 & col. 7, lines 58-61), but as would have been recognized by one of ordinary skill, plasmas supply both energetic electrons and generally UV radiation also, thus would have been consistent with the primary references' required curing as plasma apparatus emit appropriate curing means. Note that the sequence of claims 10+20 do not actually require any cure to have occurred, thus do not exclude the plasma treatment from being a curing step.

However, plasma pretreatment before subsequent coatings for improved adhesion effects is also old and well known in the art as shown by Kubacki (abstract; col. 2, lines 10-52, especially lines 15-1725-35 & 46-50) who teaches a process of coating in acrylate containing substrate (PPMA) where the first step is a preliminary plasma treatment to form hydroxyl groups via plasma to effect good adherence of the sequentially applied coating that contains SiO_2, or Kadowaki whose abstract teaches a molded polymerized substrate containing methacrylate components, which is subject to plasma treatment followed by a coating containing silanol groups, silica and metal complex components, therefore it would have been obvious to one of ordinary skill in the art to perform plasma treatments to acrylate surfaces of the primary references in order to enhance adhesion of successive oxide coatings, as good adhesion is desirable in any product which is not meant to deteriorate, especially where the barrier properties are desired to be effective and permanent.

9. Applicant's arguments filed 3/14/2006 and discussed above have been fully considered but they are not persuasive.

Applicant's arguments with respect to claims 10-21 have been considered but are moot in view of the new ground(s) of rejection.

It is noted that the support for the amendments to claim 20 of applying a plasma treatment intermediate between smoothing layer and oxide layer depositions (as opposed to before metal layer) may be derived from page 20, lines 20-22, from the negative teaching that use of plasma deposition techniques for the oxide layer means that one may not require a separate plasma surface treatment preceding the oxide deposition.

Other art of interest include the Japanese reference to Fuji Photo Film (JP 58-062040 A), which concerns a metal oxide coating & oxygen impermeable film with binder, possibly a methacrylate; copending Funkenbusch et al. (2006/0035073 A1), with process claims to a related structure, but which deposits metal or metal alloy, not an oxide layer; and Yializis et al (2005/0249901 A1), Takahashi et al. (5,934,494) & Martin et al. (6,962,671 B2), which are not prior art but contain teachings of multilayer barrier structures of interest.

Previously cited Swisher (5,112,562) is of interest for particularly for vacuum metallizing acrylate containing surfaces. In Swisher, see figure 1; col. 5, line 7-17 & 35-65; col. 6, line 19-col. 9, line 48, especially col. 7, lines 12-20, where acrylate containing surfaces are taught for plasma treating processes before metallizing; col. 8, lines 40-64 for advantages of plasma pretreatment; col. 9, lines 8-13 for vacuum pressures in the plasma & col. 9, lines 43-48 for vacuum vapor metallizing pressures. Col.s 11 & 12 discussed the figure, which shows that the treated substrate does not leave vacuum. Oxygen containing plasma treatment is noted to create a metal oxide interface with metallization, but does not directly relate to the present oxide coating, but further shows the advantages of plasma pretreatment intermediate before metal containing coatings.

The patents to Tropsha (5,665,280 & 6,165,566, see col. 1 & 4) and Kanetaka et al. (JP 2005-186402), while not prior art contain further discussion on the benefits of plasma pretreatment before deposition of oxide barrier films.

The patents to Hall et al. (4,190,681 & 4,200,681), Downing et al. (4,405,678) & Hahn (4,478,874) contain teachings of interests for inorganic oxide barrier coatings, with the hall reference particularly of interests for using in acrylate intermediate priming layer.

10. Claims 10-11, 13-16 & 21 are provisionally rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 1-9 of copending Application No. 11/272,929. Although the conflicting claims are not identical, they are not patentably distinct from each other because while claiming specific substrate in barrier characteristics this copending application is encompassed by the broader the broader limitations for substrates and properties of layers of the present application, thus constitutes obvious variations on the present claims. Note that this copending application to Padiyath et al., while having no overlapping inventors, this patent application has a later effective filing date and is to the same assignee.

This is a provisional obviousness-type double patenting rejection because the conflicting claims have not in fact been patented.

Claims 12 & 17-19 is provisionally rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 1-9 of copending Application No. 11/272,929 in view of Shaw et al. or Yializis et al (893) for reasons as applied in section 6, for providing technique details of the analogous acrylate & inorganic material depositions as discussed above.

This is a provisional obviousness-type double patenting rejection.

Claim 20 is provisionally rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 1-9 of copending Application No. 11/272,929 in view of Kubacki (4,096,315) or Kadowaki (JP 4-353819) for reasons as applied in section 8.

This is a provisional obviousness-type double patenting rejection.

11. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Marianne L. Padgett whose telephone number is (571) 272-1425. The examiner can normally be reached on M-F from about 8:30 a.m. to 4:30 p.m.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Timothy Meeks, can be reached at (571) 272-1423. The fax phone number for the organization where this application or proceeding is assigned is (571) 273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

MLP/dictation software

5/22-23/2006